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THIRTEENTH

BIENNIAL REPORT

of the

Montana

State Board *of* Health

For the Years

1925-1926

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THE TRIBUNE PRINTING CO. GREAT FALLS, MONTANA

STATE OF MONTANA

Department of Public Health

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Bureau of Vital Statistics

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L. L. Benepe, Deputy State Registrar	Helena

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DEPARTMENT OF PUBLIC HEALTH OF THE STATE OF MONTANA

Office of the Secretary,
Helena, December 1, 1926.

Hon. John E. Erickson, Governor,
Helena, Montana.

Sir:—

In compliance with Section 2447, Revised Codes of Montana, 1921, I herewith hand you the thirteenth biennial report of the State Board of Health. In doing so I wish to thank you most heartily for your support in all public health work.

W. F. COGSWELL, M. D.,
Secretary.

INTRODUCTION

The law requires two regular meetings of the State Board of Health each year, one in April and one in October. It also provides for special meetings when necessary. At these meetings reports are made by the heads of the various divisions and the health conditions and health needs in the state are thoroughly canvassed. When necessary, rules and regulations for the better protection of the public health are adopted. During the past biennium quite a number of new regulations have been adopted by the board. These regulations will be found in the appendix. Probably the most important are the regulations governing the sanitary conditions of canning factories. Canning is becoming quite an industry in the State of Montana. As new industries develop it is necessary that they be properly controlled from a sanitary standpoint.

Another important regulation passed by the board is that requiring the cutting out of all cross connections in public water supplies when such cross connections unite a contaminated water with one used for drinking purposes. Water companies and municipalities are given until July 1, 1927, to make the necessary changes.

We wish to call your attention to the reports of the heads of the various divisions. A close study of these reports will give a pretty good idea of the work of the State Board of Health.

Communicable Disease

Rocky Mountain Spotted Fever. In 1925 there were reported 33 cases of spotted fever, with 8 deaths; in 1926, 36 cases with 15 deaths. The fatality rate in 1926 was very high,—nearly 42%.

No specific cure has yet been discovered for this disease. The fatality rate in the eastern part of the state is low, but west of the divide it is very high.

Drs. Spencer and Parker, working for the U. S. Public Health Service in cooperation with the State Board of Entomology, have developed a vaccine which may prove of value in the prevention of this disease. Over 500 people in the Bitter Root Valley have been vaccinated this year. It will take some little time before the value of this vaccine can be proved, but the present indications are that it is of very great value. It is not claimed that it is of value after a case has developed. At the present time this vaccine is not available for general distribution.

In order that this vaccine may be produced under proper conditions, it is necessary that better laboratory facilities be provided and it is hoped that the coming legislature will look into this question most thoroughly.

Tularaemia. This is a disease of rabbits which may be transmitted to humans by handling of such rabbits, or by the woodtick. It is a comparatively newly described disease. No doubt in years past we have had more cases than have been diagnosed. In 1925 there were reported 28 cases of this disease in Montana; in 1926, 23 cases. This has been made a reportable disease by regulations of the State Board of Health.

Smallpox. In 1925 there were 376 cases of smallpox reported in Montana, with no deaths. In the first ten months of 1926 there were reported 288 cases with one death. On account of the mildness of this disease in recent years, people have neglected vaccination. The time is coming when this disease will assume a more malignant form in Montana, as it has in many of the eastern states. When this time comes we presume people will take a greater interest in vaccination.

Typhoid Fever. In 1925 there were 244 cases of typhoid fever reported with 25 deaths. During the first ten months of 1926, there were reported 93 cases with 11 deaths. The death rate in this disease in 1925 showed considerably higher than in 1924, but if the last two months of 1926 shows no higher than the previous ten months, we will be able to show probably the lowest death rate from typhoid fever in 1926 that has ever been experienced in Montana.

Scarlet Fever. A mild form of scarlet fever has been quite prevalent in different parts of the state during 1925 and 1926. Epidemics of a mild form of this disease are very difficult to control on account of the fact that so many cases are overlooked. During 1925 there were 1337 cases reported with 19 deaths, and during the first ten months of 1926, 1201 cases were reported with 16 deaths. A special bulletin on this disease has recently been published by the State Board of Health, and may be had on application.

Diphtheria. There were 329 cases of diphtheria reported, with 33 deaths, in 1925, and during the first ten months of 1926, 173 cases were reported with 13 deaths. A recent bulletin has been published on diphtheria and may be had on application.

Trachoma. At a meeting of the State Board of Health held April 3, 1925, the secretary was instructed to secure "all possible information as to actual conditions relative to trachoma on the Indian Reservations, and to take steps to prevent the spread of this disease."

The secretary had a conference with Commissioner Burke at his offices in Washington, and requested that a survey be made of the Indian Reservations in Montana, with a view to determining the number of cases of trachoma. Dr. J. R. Collard of the Indian Service, was sent to Montana and made a survey on the different reservations. In his report to the State Board of Health on October 6, 1925, he makes the following statement:

> "Crow Reservation had 25% trachoma (450); Tongue River 35% (471); Fort Peck Sioux 10% (137); Fort Peck Assiniboines 25% (202), and Flathead about 6% (160)."

This makes a total of 1420 cases of trachoma on these five reservations.

In a letter from Superintendent F. C. Campbell, dated December 21, 1925, he stated that there were 168 known cases of trachoma on the Blackfeet Reservation. This includes the cases in the school at Browning, so that officially there were reported to the State Board of Health from all the reservations in Montana, 1588 cases of trachoma in 1925. In a letter from Dr. J. R. Collard, dated December 2, 1925, he makes the following statement:

> "Trachoma among the Indians of your state will average 25%, and there are 13,000 Indians, in round numbers."

During the year 1925 there were reported 186 cases of trachoma by our health officers, as occurring outside the reservations. This makes a grand total of 1774 cases of trachoma reported during the year 1925.

During the year 1926, Dr. C. E. Yates, trachoma expert for the Indian Service, reported officially to the State Board of Health the following number of cases of trachoma:

Blackfeet Reservation cases	131
Rocky Boy Reservation cases	84
Fort Peck Reservation cases	255

Making a total of 470 cases reported from the reservations and 7 reported by the health officers outside the reservations, making in all 477 cases reported. Of the cases reported by Dr. Yates on the reservations, 59 were whites. The fact that so many of these cases have occurred amongst the whites shows that trachoma is a serious menace in the state and that the state can no longer shut its eyes to this fact. A survey and examination should be made of all school children in the counties surrounding the reservations, to determine just how much trachoma does actually exist. We are powerless to do this without funds. The Indian Service is alive to the situation on the reservations and we believe is doing its utmost to eradicate trachoma. Under the auspices of that Service, Dr. L. Webster Fox held a clinic at Browning, did many operations and instructed many of the doctors in his methods. Dr. Yates took special training under Dr. Fox and has done many operations on the different reservations, with apparent success. He is extremely enthusiastic over his results and believes that trachoma can be eradicated by operative procedure. He is much more optimistic than the majority of ophthalmologists.

The report of the number of cases and number of deaths of the other communicable diseases will be found in the report of the vital statistics division.

INTERNATIONAL HEALTH BOARD

The State Board of Health appreciates the aid given it by the International Health Board of the Rockefeller Foundation. During the past four years the International Health Board has contributed $13,000.00 for public health work in Montana. This contribution was timely and helped keep the State Board of Health organization intact during the years when appropriations were cut.

BUREAU OF VITAL STATISTICS

W. F. Cogswell, M. D., State Registrar, Helena
L. L. Benepe, Deputy State Registrar, Helena

The Vital Statistics Registration Act was passed by the legislature in 1907, and became effective June 1st of that year. The Act provided for the registration of births and deaths for legal, sanitary, and statistical purposes. The Bureau of Vital Statistics was placed under the supervision of the Secretary of the State Board of Health, who is the State Registrar.

From 1907 forward, the Bureau of Vital Statistics has made an attempt to collect all the records of births and deaths occurring within the state, with an ever increasing percentage of the total in both categories, as persons connected with the gathering of the material in the field have become more familiar with the work. The totals of the records for the first six months, June through November, 1907, the initial months in which the Registration Act became effective are not available in statistical form. The following table shows the total number of births and deaths collected and the Vital Index, i. e., 100 Births/Deaths for the year 1908 through 1925.

TABLE I.
The Number of Births and Deaths Occurring in Montana, 1908-1925.
The Excess of Births over Deaths, and the Vital Index.

Year	Births	Deaths	Excess Births Over Deaths	Vital Index
December, 1907, through November, 1908	5,842	4,353	511	134.2
July 1, 1908, to June 30, 1909	6,021	4,241	1,780	142.0
July 1, 1909, to June 30, 1910	6,294	3,911	2,383	160.9
Calendar Year				
1910	6,124	3,996	2,128	153.2
1911	7,542	4,006	3,536	188.2
1912	8,133	4,397	3,736	185.0
1913	8,682	5,098	3,584	170.3
1914	9,969	5,048	4,921	197.5
1915	11,132	5,242	5,890	212.3
1916	11,300*	5,483	5,817	206.0
1917	11,600*	6,421	5,179	180.6
1918	11,800*	8,985	2,815	131.3**
1919	12,017	5,786	6,231	207.7
1920	11,862	5,289	6,573	224.2
1921	12,127	4,693	7,488	258.4
1922	11,060	5,106	5,954	216.6
1923	10,524	4,914	5,615	214.4
1924	10,283	4,991	5,292	206.0
1925	10,302	5,103	5,199	201.9

*Estimated.
**Flu year.
1908 through 1915 include still births, in both the births and deaths.
1916 through 1925 do not include still births.

A glance at Table I shows that death reporting became accurate far more rapidly than did birth reporting. There was a constant increase in birth reporting up to 1921, while the death reports remain almost stationary from 1914 through to the present excepting the influenza years. The Vital Index column indicates that we have been registering over twice as many births as deaths since 1919.

Montana was admitted to the United States Registration Area for deaths in 1910. That year we proved to the federal authorities that we were registering over 90% of the deaths occurring in the state.

Satisfactory birth reporting was not reached until about 1919. In 1921 this office requested the United States Census Bureau to make a birth check, so that we might enter the Birth Registration Area. A check was made of the months of July and August of that year and indicated we were recording 93.4% of the births. We were accordingly admitted as the twenty-fourth state in the United States Registration Area on January 1, 1922.

The Census Bureau estimates our increase in population according to the yearly increase between the census counts of 1910 and 1920. This method would indicate that population is increasing at the rate of approximately 18,000 per year, and would give us a population of about 665,209 people July 1, 1926. This method of population estimate gave Montana absurdly low birth and death rates for the past three years. Realizing that our population had not increased at this rate since 1920, other methods of calculating were tried, namely, the school census and the registered voters. These methods showed that our state had actually lost in population since 1920, rather than gained.

The figures were submitted to the Census Bureau where they were checked and additional methods of estimating were used. The school enrollment of 1924 showed 7% less than in 1920. The agricultural census showed 42,626 less people on farms in Montana in 1925 than there were in 1920.

A summary of all methods used to estimate the population at the beginning of 1925 follows:

	The census of 1920 showed	548,889	people in the state
1.	The registered voter election 1924 showed	510.029	
2.	The school census of fall 1924 showed	553,835	(Padded)
3.	The school enrollment fall of 1924 showed	510,467	
4.	The agricultural census Jan. 1925 showed	506,263	
	Average of the four	520,148	

From these four sources (the school census being padded) we can safely assume that our actual population at present is not over 520,000 people, or some 25,000 to 30,000 less than it was when the census was taken in 1920.

In 1924 Montana had a death rate of 9.4 per 1000 of population; in 1925 the rate was 9.6, an increase of .2 per 1000. The birth rate in 1924 was 19.2 and in 1925 19.3, an increase of .1 per 1000. The death rate for the United States Registration Area in 1924 was 11.8 and in 1925 11.7. For births in the area the rate was 22.6 in 1924 and 21.2 in 1925. Montana's death rate was 2.4 per 1000 lower than the Registration Area in 1924 and 2.1 lower in 1925. Likewise the birth rate was 3.2 per 1000 lower in 1924 and 1.9 lower in 1925.

Tables II and III following show the deaths by months and counties with the rate per 1000 for Montana 1924 and 1925 respectively.

Tables IV and V following show the births by months and counties with the rate per 1000 for Montana 1924 and 1925 respectively.

TABLE 11.

Deaths by Months and Counties and the Death Rate Per 1,000 of Population for Each County in Montana, 1924.

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Rate Per 1,000.
Montana (state total)	422	458	454	454	437	413	388	356	391	396	359	463	4991	9.4
County—														
Beaverhead	10	8	9	3	7	5	2	3	4	3	5	8	67	9.7
Big Horn	10	8	12	8	9	9	10	2	3	2	10	1	84	9.9
Blaine	10	7	4	7	6	3	6	3	7	5	0	6	64	9.7
Broadwater	1	1	5	1	0	1	2	4	7	0	3	1	26	9.3
Carbon	11	10	4	6	7	2	2	7	6	8	9	5	77	5.0
Carter	2	2	2	1	2	1	4	0	3	2	3	2	24	7.0
Cascade	32	38	36	30	30	38	23	24	32	26	27	31	367	9.6
Chouteau	1	1	0	6	3	1	6	1	7	5	3	3	37	5.0
Custer	7	10	12	9	10	11	9	10	6	7	9	11	111	9.4
Daniels	0	2	2	4	1	1	0	6	2	3	1	3	25	4.7
Dawson	6	11	6	13	4	7	9	5	7	6	6	5	85	9.8
Deer Lodge	32	30	31	32	29	22	18	24	31	30	17	25	321	19.0
Fallon	1	1	3	2	3	4	1	3	0	2	2	1	23	5.6
Fergus	10	3	9	15	12	16	10	9	12	16	8	12	132	8.1
Flathead	23	26	14	14	13	9	18	15	10	9	18	21	190	10.4
Gallatin	9	12	7	14	12	9	15	9	15	9	12	12	135	8.4
Garfield	2	2	0	4	0	2	2	2	2	0	1	0	17	3.9
Glacier	7	9	8	6	13	16	5	3	5	4	1	8	85	17.1
Golden Valley	1	3	1	0	0	2	0	4	1	1	0	2	15	4.6
Granite	6	5	2	2	4	4	2	1	1	1	2	1	31	8.5
Hill	9	4	15	16	11	10	9	5	7	9	6	5	106	9.1
Jefferson	1	1	5	2	2	5	3	4	4	1	2	3	33	6.7
Judith Basin	1	2	0	1	1	2	0	0	2	0	0	2	11	1.9
Lake	2	2	7	10	8	10	9	7	10	6	6	3	80	7.6
Lewis and Clark	16	32	32	26	28	17	16	16	23	12	21	28	267	14.1
Liberty	0	0	1	0	1	0	0	3	1	0	1	1	8	5.5
Lincoln	6	4	2	3	2	3	4	4	3	10	2	4	47	5.4
McCone	1	1	0	1	1	2	1	1	1	1	2	2	14	3.5
Madison	4	4	6	3	3	2	6	4	2	6	4	3	47	6.9
Meagher	5	2	3	2	2	3	0	0	1	1	2	0	21	8.4
Mineral	1	0	3	1	3	0	1	3	3	2	1	0	18	7.8
Missoula	17	33	20	22	18	23	23	21	14	22	13	26	252	12.1
Musselshell	1	7	9	3	10	4	7	2	4	4	7	11	69	8.9
Park	13	12	14	14	12	13	16	7	12	13	10	19	55	12.7
Phillips	3	2	1	3	5	3	5	2	0	2	3	4	33	4.6
Pondera	3	0	5	3	1	4	1	1	0	3	2	3	26	4.9
Powder River	2	1	1	0	2	2	1	2	0	1	2	2	16	5.8
Powell	3	4	4	4	1	3	4	4	4	7	2	7	47	7.2
Prairie	0	0	3	3	3	1	1	4	2	1	0	2	20	5.1
Ravalli	5	9	3	9	10	4	7	3	6	13	9	9	87	9.3
Richland	4	4	8	5	2	4	1	3	3	6	3	4	47	6.3
Roosevelt	9	10	17	11	7	5	12	9	7	7	6	6	106	10.5
Rosebud	4	6	5	9	5	4	8	5	5	4	4	11	70	9.5
Sanders	0	3	10	6	4	0	6	7	6	4	4	6	56	11.5
Sheridan	3	5	2	7	3	5	6	3	1	5	1	1	42	4.4
Silver Bow	81	74	68	63	78	67	62	55	70	63	67	94	842	13.5
Stillwater	8	3	3	1	3	7	6	4	2	4	4	4	49	7.0
Sweet Grass	3	4	5	2	1	4	0	2	4	1	1	3	30	7.0
Teton	5	1	2	2	2	3	1	3	0	1	3	0	23	4.4
Toole	0	3	2	3	4	2	2	1	3	3	2	1	26	6.2
Treasure	1	2	1	2	0	0	1	1	1	0	1	2	12	7.7
Valley	9	5	6	9	12	5	8	5	2	8	6	7	82	7.6
Wheatland	1	3	2	0	2	4	1	1	4	1	1	2	22	4.4
Wibaux	1	3	2	1	0	1	0	0	1	2	1	2	14	4.8
Yellowstone	19	23	20	30	25	28	16	29	22	34	23	28	297	9.3

TABLE III.

Deaths by Months and Counties and the Death Rate Per 1,000 of Population for Each County in Montana, 1925.

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Rate Per 1,000.
Montana (state total)	439	417	445	426	470	415	422	387	425	427	414	416	5103	9.6
County—														
Beaverhead	5	3	5	4	4	3	5	4	8	7	7	3	58	8.4
Big Horn	11	6	2	7	14	11	7	7	4	6	8	10	93	10.9
Blaine	1	1	10	8	13	5	7	8	8	13	6	6	86	13.1
Broadwater	5	3	2	3	2	2	1	1	2	1	1	2	25	8.9
Carbon	10	8	10	11	9	3	12	6	10	8	10	7	104	6.7
Carter	3	1	3	0	5	1	0	1	4	2	3	1	24	7.0
Cascade	30	28	32	26	41	31	32	45	22	27	18	19	351	9.2
Chouteau	5	2	3	4	8	2	3	3	2	2	2	4	40	5.4
Custer	12	9	14	12	9	14	5	5	8	8	6	9	111	9.4
Daniels	1	4	1	8	2	5	3	3	4	3	3	4	41	7.7
Dawson	7	10	7	5	7	7	6	4	8	8	2	7	78	9.0
Deer Lodge	32	30	24	26	30	23	24	22	17	30	26	31	315	18.6
Fallon	5	3	5	5	6	2	2	1	1	1	2	1	34	8.1
Fergus	11	9	9	13	16	7	10	15	11	10	17	11	139	8.5
Flathead	18	19	18	18	16	22	9	12	20	18	17	12	199	11.0
Gallatin	16	14	12	9	12	10	14	12	14	9	8	13	143	8.9
Garfield	2	1	1	0	2	1	2	2	2	1	2	4	20	4.6
Glacier	13	6	5	8	2	5	18	9	4	8	5	6	89	17.9
Golden Valley	1	1	0	0	1	0	2	1	1	0	2	0	9	2.7
Granite	3	4	4	0	3	2	3	1	1	1	1	4	27	7.4
Hill	6	9	9	4	13	10	11	6	11	10	10	9	108	9.3
Jefferson	2	4	5	6	3	6	2	4	4	7	6	3	52	10.5
Judith Basin	1	2	3	2	0	0	1	3	2	2	2	2	20	3.5
Lake	5	5	8	6	5	12	12	7	2	5	6	6	79	7.5
Lewis and Clark	17	14	37	19	18	18	19	16	17	19	20	28	242	12.8
Liberty	0	1	1	1	1	2	0	1	4	1	0	0	12	8.3
Lincoln	8	4	3	4	7	2	2	2	7	4	2	10	55	6.3
McCone	1	2	1	2	2	2	0	0	2	1	1	0	14	3.5
Madison	6	4	6	1	5	4	4	6	1	6	2	5	50	7.3
Meagher	1	1	2	1	0	0	2	2	1	0	2	3	15	6.0
Mineral	2	0	1	1	1	3	0	2	2	1	5	0	18	7.8
Missoula	22	19	18	30	17	22	16	21	25	18	28	20	256	12.3
Musselshell	6	5	5	8	3	5	4	5	9	4	11	4	69	8.9
Park	11	14	9	7	8	8	10	9	10	15	2	4	107	8.8
Petroleum	0	1	1	0	1	1	3	0	1	0	0	1	9	3.8
Phillips	1	3	3	5	5	6	4	2	6	2	4	4	45	6.3
Pondera	5	3	5	3	2	7	9	6	7	3	2	4	56	10.5
Powder	1	0	1	0	2	0	0	2	0	1	0	3	10	3.7
Powell	2	9	2	3	5	1	6	5	4	6	4	5	52	8.0
Prairie	2	1	1	1	2	3	1	2	2	1	0	0	16	4.1
Ravalli	7	3	7	3	9	7	5	7	7	5	9	6	75	8.0
Richland	7	7	5	6	3	3	8	6	6	3	8	6	68	9.1
Roosevelt	14	10	8	3	17	7	9	5	10	12	4	7	106	10.5
Sanders	3	2	4	2	2	4	4	7	6	7	7	3	51	10.5
Sheridan	5	9	2	4	4	2	4	4	4	5	5	6	54	5.7
Rosebud	3	6	8	15	9	6	7	3	6	8	4	8	83	11.3
Silver Bow	73	66	80	73	78	71	51	46	79	65	68	75	825	13.2
Stillwater	2	3	5	5	3	3	3	3	3	6	4	3	43	6.2
Sweet Grass	3	2	5	2	4	0	5	4	2	4	6	2	39	9.9
Teton	0	2	4	5	0	3	6	7	7	1	3	4	42	8.0
Toole	2	2	1	3	2	4	5	3	4	3	4	1	34	8.1
Treasure	0	1	3	2	0	1	1	0	1	1	1	2	13	8.3
Valley	4	4	3	4	5	7	6	7	3	7	9	5	64	5.9
Wheatland	1	3	0	4	3	1	2	1	1	3	3	2	24	4.8
Wibaux	5	1	0	2	1	2	0	0	1	0	2	2	16	5.5
Yellowstone	20	33	22	22	28	26	35	21	17	28	24	19	295	9.3

TABLE IV.

Births by Months and Counties and the Birth Rate Per 1,000 of Population for Each County in Montana, 1924.

	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total	Rate Per 1,000
Montana (state total)	849	818	911	832	901	845	896	929	815	814	852	821	10,283	19.2
County														
Beaverhead	7	7	6	6	4	9	7	11	9	7	7	8	88	12.7
Big Horn	12	13	8	15	12	16	11	17	15	11	31	11	172	20.2
Blaine	14	15	18	11	13	14	20	18	8	13	18	29	191	29.0
Broadwater	3	7	1	1	2	5	6	7	4	5	5	0	46	16.4
Carbon	23	16	25	28	22	12	25	29	16	20	29	23	268	17.3
Carter	3	9	10	6	10	11	9	6	5	12	4	5	90	26.4
Cascade	73	74	66	61	90	79	72	83	67	66	74	79	884	23.0
Chouteau	8	4	4	8	11	7	13	10	14	9	8	11	107	14.5
Custer	8	16	23	13	28	31	17	18	22	19	21	19	235	19.9
Daniels	17	7	13	11	9	8	12	11	14	15	20	8	145	27.4
Dawson	18	21	23	17	20	19	13	18	22	8	25	19	223	25.8
Deer Lodge	22	15	19	28	22	16	21	24	16	27	25	20	255	15.1
Fallon	6	6	4	9	8	13	14	5	12	4	3	8	92	21.9
Fergus	36	20	31	35	36	31	29	36	36	22	36	28	376	23.0
Flathead	33	29	35	35	23	33	42	39	32	42	31	34	408	22.5
Gallatin	18	24	37	23	20	28	27	36	25	20	27	33	318	19.8
Garfield	5	6	10	9	7	5	7	3	6	5	6	2	71	16.3
Glacier	11	14	15	12	14	11	6	15	11	11	9	11	140	28.1
Golden Valley	6	2	5	5	3	4	5	7	0	4	7	1	49	15.0
Granite	2	1	6	4	3	6	5	6	5	2	5	1	46	12.6
Hill	19	19	36	20	19	28	25	10	14	20	15	26	251	21.6
Jefferson	5	1	0	1	4	2	5	7	0	3	6	4	38	7.7
Judith Basin	6	6	7	8	5	3	7	7	2	1	6	4	62	10.9
Lake	21	11	14	17	13	13	21	16	19	19	15	15	194	18.5
Lewis and Clark	32	29	31	22	34	29	35	27	28	29	29	25	350	18.5
Liberty	1	3	1	0	2	4	2	5	1	5	2	5	31	21.4
Lincoln	13	13	20	14	8	8	13	16	13	16	13	8	155	17.8
McCone	13	7	6	3	5	8	6	6	7	7	10	8	86	21.8
Madison	2	8	7	2	11	3	8	6	7	7	3	8	72	10.5
Meagher	1	3	6	1	0	1	0	2	3	2	1	2	22	8.8
Mineral	3	4	0	3	2	3	4	3	4	0	0	2	28	12.1
Missoula	48	37	55	10	45	34	41	33	41	29	35	35	473	22.7
Musselshell	15	20	18	19	23	17	11	18	20	7	15	17	200	25.9
Park	23	19	22	14	31	29	18	15	23	11	13	30	248	20.3
Phillips	12	12	16	14	15	11	11	18	10	12	14	16	161	22.4
Pondera	12	10	15	15	18	8	7	8	8	13	8	11	133	25.0
Powder River	3	3	2	3	6	6	4	7	9	6	3	5	57	20.8
Powell	10	10	5	10	9	7	6	8	8	8	12	6	99	15.2
Prairie	7	7	5	10	8	6	8	4	3	8	10	9	85	21.8
Ravalli	14	17	18	17	18	14	21	24	13	9	14	11	190	20.3
Richland	19	12	15	13	15	17	19	13	13	12	16	15	179	24.1
Roosevelt	23	26	21	15	26	19	34	23	26	24	28	19	284	28.0
Rosebud	11	10	17	12	4	10	14	16	11	10	7	15	137	18.7
Sanders	8	4	8	9	9	3	4	10	12	11	5	12	95	19.5
Sheridan	14	21	16	12	17	19	13	20	12	11	10	8	173	18.1
Silver Bow	81	76	68	79	71	67	75	71	71	68	70	58	855	13.7
Stillwater	13	12	12	11	14	11	19	15	12	13	12	8	152	21.8
Sweet Grass	8	7	8	10	6	5	8	4	8	10	4	7	85	19.7
Teton	9	13	9	6	5	13	9	11	5	7	8	5	100	19.1
Toole	7	5	5	5	9	7	9	8	7	4	6	3	75	17.9
Treasure	1	3	6	3	2	3	6	4	2	1	5	7	43	27.6
Valley	17	27	22	20	25	19	22	19	7	25	18	15	236	21.8
Wheatland	10	10	10	13	6	7	2	10	9	9	5	6	97	19.1
Wibaux	5	2	4	3	4	4	3	4	5	3	2	4	43	14.8
Yellowstone	38	45	47	51	55	49	45	62	43	72	41	42	590	18.6

TABLE V.

Births by Months and Counties and the Birth Rate Per 1,000 of Population for Each County in Montana, 1925.

	Jan.	Feb.	March	April	May	June	July	August	Sept.	Oct.	Nov.	Dec.	Total	Rate Per 1,000
Montana (state total)	863	811	933	883	927	865	842	889	874	806	815	794	10,302	19.3
County														
Beaverhead	7	7	4	12	5	8	7	8	7	4	5	8	82	11.8
Big Horn	22	18	10	9	13	12	20	21	15	13	22	19	194	22.8
Blaine	18	10	18	22	21	19	15	13	14	14	16	4	184	28.0
Broadwater	5	2	4	3	5	3	9	2	4	4	3	2	46	16.4
Carbon	21	19	34	30	28	31	18	27	15	24	19	17	283	18.2
Carter	10	8	7	9	4	4	5	7	11	0	6	8	79	23.2
Cascade	69	68	88	48	85	69	59	61	66	63	70	69	815	21.2
Chouteau	12	7	2	11	13	6	6	11	9	8	5	8	98	13.2
Custer	16	20	25	29	19	25	16	16	16	18	26	13	239	20.2
Daniels	11	12	11	16	18	14	11	11	8	12	14	8	146	27.6
Dawson	21	19	24	24	19	20	13	16	21	19	10	18	224	25.9
Deer Lodge	24	13	21	19	36	20	20	19	27	22	12	28	261	15.4
Fallon	4	5	6	16	12	10	8	10	11	13	10	7	112	26.6
Fergus	33	30	35	39	28	29	37	38	47	38	37	22	413	25.3
Flathead	38	32	41	34	39	44	40	39	36	31	32	33	439	24.2
Gallatin	27	20	32	24	23	22	30	29	33	20	20	17	297	18.5
Garfield	7	4	4	2	8	5	3	7	5	10	4	3	62	14.2
Glacier	13	23	10	9	5	10	10	4	9	11	11	5	120	24.1
Golden Valley	0	4	2	2	3	6	2	3	4	4	1	4	35	10.7
Granite	3	2	2	2	1	0	3	2	1	0	5	4	25	6.8
Hill	21	19	29	30	26	20	17	32	28	28	29	21	300	25.8
Jefferson	2	4	1	3	5	4	5	2	1	2	9	3	41	8.3
Judith Basin	12	3	4	14	5	5	4	8	5	4	5	7	76	13.3
Lake	10	10	12	10	16	24	12	15	5	12	10	12	148	14.1
Lewis and Clark	30	37	21	21	28	18	19	21	30	19	21	24	289	15.3
Liberty	2	3	4	2	3	2	3	1	8	2	1	4	35	24.2
Lincoln	19	11	16	9	8	3	9	11	9	15	10	11	131	15.0
McCone	3	1	11	4	9	6	5	3	8	6	5	5	66	16.7
Madison	6	4	13	8	8	10	6	9	5	3	4	9	85	12.4
Meagher	1	3	1	2	2	1	1	0	0	2	0	3	16	6.4
Mineral	0	4	4	1	2	0	1	2	1	2	3	2	22	9.5
Missoula	32	33	38	34	38	44	34	42	40	40	36	30	441	21.5
Musselshell	15	18	15	17	24	21	16	10	15	7	10	18	186	24.1
Park	20	20	26	20	20	20	19	20	22	18	14	11	230	18.8
Petroleum	1	4	2	1	3	0	2	1	2	4	3	4	27	11.4
Phillips	9	10	11	17	15	12	17	11	6	7	9	10	134	18.7
Pondera	14	16	10	7	10	7	11	15	15	12	14	12	143	26.9
Powder River	4	3	3	5	5	2	1	4	2	6	5	2	42	15.3
Powell	4	6	7	7	4	16	7	2	7	9	7	5	81	12.5
Prairie	8	9	6	8	9	1	6	11	13	7	7	5	90	23.2
Ravalli	14	10	15	10	13	6	12	13	19	11	16	23	162	17.3
Richland	11	11	17	12	20	10	12	16	15	15	22	18	179	24.1
Roosevelt	29	23	37	26	30	34	22	25	26	27	29	27	335	33.0
Rosebud	11	12	6	11	9	9	7	11	12	11	12	11	122	16.6
Sanders	5	6	6	6	4	8	6	12	4	4	5	5	71	14.6
Sheridan	14	18	22	17	15	20	16	20	16	19	19	17	213	22.3
Silver Bow	65	67	91	89	95	94	103	69	78	80	69	76	976	15.7
Stillwater	15	10	13	9	13	8	13	16	14	9	10	11	141	20.2
Sweet Grass	5	9	5	9	10	6	5	15	11	5	6	11	97	22.5
Teton	3	3	2	3	2	7	11	4	9	5	9	4	62	11.9
Toole	6	7	2	7	4	8	10	9	5	10	5	9	82	19.5
Treasure	1	5	5	3	2	3	3	3	4	6	1	1	37	23.7
Valley	28	14	20	19	15	19	26	30	22	16	25	24	258	23.8
Wheatland	9	4	3	13	9	5	10	12	13	6	9	3	96	19.2
Wibaux	6	4	4	2	6	3	4	2	4	3	4	5	47	16.2
Yellowstone	67	67	71	67	55	52	55	68	41	46	44	54	687	21.6

TABLE VI.

Communicable Disease, showing the number of cases reported, the rate per 100,000 and the number of deaths with the rate per 100,00 in Montana for the years 1924-1925.

DISEASE	1924				1925			
	No. Cases Reported	Rate per 100,000	No. Deaths Reported	Rate per 100,000	No. Cases Reported	Rate per 100,000	No. Deaths Reported	Rate per 100,000
Tuberculosis (all forms)	648	118.1	436	79.4	620	113.0	376	68.5
Typhoid Fever	*130	23.7	13	2.4	*244	44.5	25	4.6
Smallpox	950	173.1	3	0.5	376	68.5	0	0
Diphtheria	548	99.8	53	9.7	329	59.9	33	6.0
Septic Sore Throat	17	3.1	1	0.2	8	1.5	3	0.6
Scarlet Fever	1,040	189.5	32	5.8	1,337	243.6	19	3.5
Measles	6,049	1102.0	69	12.6	1,389	253.1	3	0.5
Whooping Cough	485	88.4	26	4.7	585	106.6	56	10.2
Chicken Pox	714	130.1	0	0	764	139.2	3	0.6
Mumps	67	12.2	0	0	1,701	309.9	1	0.2
Influenza	59	10.7	57	10.4	98	17.9	78	14.2
Meningitis	16	2.9	15	2.7	12	2.2	6.	1.1
Poliomyelitis	183	33.3	25	4.6	41	7.5	8	1.5
Spotted Fever	47	8.6	10	1.8	33	6.0	8	1.5
Encephalitis	13	2.4	12	2.2	8	1.5	8	1.5
Tetanus	1	0.2	1	0.2	3	0.6	3	0.6
Erysipelas	33	6.0	13	2.4	40	7.3	15	2.7
Rabies	0	0	0	0	1	0.2	1	0.2
Gonorrhoea	175	31.9	0	0	186	33.9	1	0.2
Syphilis	467	85.1	10	1.8	102	18.6	20	3.6
TOTAL	11,642	2121.0	776	141.4	7,877	1,435.1	667	121.5

*One doubtful case.

The outstanding facts in Table VI are:

(a) Approximately 33% or one-third less cases of communicable diseases in 1925 than in 1924, and 12½% or ⅛ less deaths.

(b) A reduction in both cases and deaths from all forms of tuberculosis.

(c) A large increase in cases and almost a 100% increase in deaths from typhoid fever.

(d) Gratifying decreases in both cases and deaths from diphtheria and scarlet fever.

(e) 1924 was a measles year in Montana. 1925 was apparently on the downward swing of the measles cycle.

(f) A large increase in cases and over 100% increase in deaths from whooping cough.

(g) Decreases in flu, meningitis, poliomyelitis, spotted fever and encephalitis.

(h) Increase in tetanus, erysipelas, rabies and syphilis.

The diseases causing the greatest number of fatalities in order of numbers 1924-1925:

	Disease	1924	1925
1.	Heart	544	577
2.	Accidents, Total	472	471
3.	Tuberculosis, (All Forms)	436	376
4.	Early Infancy	396	388
5.	Pneumonia (Inc. Broncho)	382	441
6.	Cancer	370	379
7.	Apoplexy	315	409
8.	Nephritis	315	315
	Total	3,030	3,356

These eight causes of death accounted for 60% or three fifths of the total deaths in 1924, and 66% or two thirds of the total in 1925.

The causes are listed in order of importance in 1924. The changes in 1925 are: Heart and accidents remain first and second; tuberculosis drops from third to seventh place; pneumonia steps forward from fifth to third; apoplexy forward from seventh to fourth; early infancy drops back from fourth to fifth; cancer and nephritis remain sixth and eighth respectively in both years.

MONTANA INFANT MORTALITY

1921-1925—By Ages and Causes

The study is over the past five years, which are the latest available figures. 1921 was the year Montana was checked by the Census Bureau for birth reporting and the year in which we were admitted to the United States Registration Area, representing, then, our first year of accurate birth reporting.

Table VII. The total number of births and the deaths under one year from 1921-1925, and infant mortality rates:

Year	Births	Deaths under 1 yr.	Rates
1921	12,127	811	66.9
1922	11,060	767	69.3
1923	10,524	761	72.3
1924	10,283	675	65.6
1925	10,302	706	68.5
Total	54,296	3,770	69.4

TABLE VIII.

Deaths Under One Year in Montana by Ages, 1921-1925.

CAUSE	—1 day	1 day	2 days	3-6 days	7-13 days	14-20 days	21-30 days	1 month	2 months	3-5 months	6-8 months	9-11 months	Total
Smallpox		1			2			1		1			5
Measles				1		2	1	3	1	5	6	14	33
Scarlet Fever								1		1	2	1	5
Whooping Cough					2	5	3	18	14	25	18	18	103
Diphtheria							1	1	1	1	3	5	12
Influenza	2		1		3	6	1	7	6	16	19	8	69
Erysipelas					3	4	1	8	3	4	2	2	27
Poliomyelitis										1		3	4
Other Epidemic									1	1	1		3
Tuberculosis—Pul.				1				1		5		5	12
Tuberculosis—Mam.										1	3	2	6
Other Tuberculosis									1		1		2
Syphilis	2			1	1	1	1	1	5	2		1	15
Septicemia			1			1	3	1			1	2	9
Rickets								1	1	2	1		5
Thymus				2			1			2			5
Meningitis		1	2	1	2	1		8	6	9	10	5	45
Convulsions		5	4	7	7	1		4	4	4	5	7	48
Ear										3	1		4
Heart		1	1	1	3	1	1	5	8	1	2	2	26
Bronchitis	1	1	2	3	1	4	1	3	3		2	5	26
Bronchopneumonia	1		2	13	14	19	19	52	36	72	66	39	333
Pneumonia	2	1	2	6	11	9	8	35	24	41	24	25	188
Diarrhea-Enteritis	1		3	12	15	10	15	51	47	98	80	33	365
Intestinal Obstruction				1	1	1	2	1	2	7	3	1	19
Nephritis	1	3		1	1	1		3	1	1	1		13
Congenital Malformations	85	24	41	60	34	19	19	19	12	20	6	4	343
Congenital Debility	40	15	10	34	25	11	9	18	12	23	4		201
Premature Birth	707	145	73	123	91	37	24	28	4	3	2	2	1239
Other Infancy	49	15	35	62	41	13	10	20	6	21	8	3	283
Burns										2	3	2	7
Suffocation	2	2		2			4	1	1	2	2		16
Ill-defined	5	7	8	14	10	6	5	13	6	24	6	5	109
All Others	6	6	6	22	13	3	5	14	7	25	20	13	140
TOTAL	904	227	191	367	280	155	134	318	212	423	302	207	3720

The analysis of Table VIII the total for the five-year period shows: The percentage deaths by ages in first year of life.

Age Period	No. Deaths	Percentage Total
Under 1 day	904	24.3
1st day	227	6.1
2nd day	191	5.2
3-6 days	367	9.9
Under 1 week	1,689	45.4
2nd week	280	7.5
3rd week	155	4.2
4th week	134	3.6
Under 1 month	2,258	60.7
1 month	318	8.5
2 months	212	5.7
3-5 months	423	11.4
6-8 months	302	8.2
9-11 months	207	5.6
Under 1 year	3,720	100.0

From the above we see that 24.3% or approximately one-fourth of the deaths under one year occur during the first day; 45.4% or nearly one-half, the first week, and 60.7% or three-fifths during the first month of life.

Analyzing Table VIII for causes of death, we find:

Causes	No. Deaths	Percentage
Communicable Diseases	305	8.2
Nervous Diseases	97	2.6
Heart	26	.7
Respiratory	547	14.7
Digestive and Kidney	397	10.7
Congenital Malformations and Debility	544	14.6
Premature	1,239	33.3
Early Infancy	283	7.6
Burns and Suffocation	23	.6
Ill-Defined	109	2.9
Other Diseases	140	3.8
Total	3,720	100.0

If we take the causes in this last grouping separately, prematurity and injury at birth account for exactly one-third of the total. Second, the respiratory diseases or pneumonia, including broncho and bronchitis, constitute 14.7% or one-seventh. Third, congenital malformations and debility 14.6% or another one-seventh. Fourth, the digestive and kidney, in which kidney plays a very small part, with 10.7% or one-tenth of the total. The others in order are: Total communicable 8.2%, diseases pertaining to early infancy 7.6%, ill-defined 2.9%, nervous, including meningitis and convulsions 2.6%, heart 0.7%, burns and suffocation .6%, all other diseases 3.8%.

Correlating the two frequencies in Tabble VIII, that is, age at death by cause, we get the following groups:

1. Deaths under one day. These constitute 24.3% of the total and are almost entirely related to the natal and prenatal causes.

2. Deaths under one week (over one day), comprise 21.2% of the deaths under one year and are related mostly to natal and prenatal causes, but a few additional items as post-natal, such as improper care, pneumonia and other, begin to enter.

3. Deaths under one month (over one week), comprise 15.3%. These are still related to prenatal, natal and post-natal, with larger numbers of deaths due to the pneumonias and digestive diseases; also the communicable diseases begin to show.

4. Deaths under one year (over one month), comprise 39.2%. The prenatal, natal and post-natal deaths are still in evidence but to a lesser degree, while the pneumonias, digestive disorders and the communicable diseases and nervous diseases take their greatest toll in the order named.

Summary

Natal and pre-natal causes are responsible for the greatest number of deaths of infants under one year. The greatest number occurred the first day of life and constantly diminished through the year.

Respiratory diseases account for the second greatest number of deaths. They are comparatively few in the first week of life, but constantly increase through the year.

Gastro intestinal disorders take the third greatest toll, and like the respiratory diseases are few at the beginning of life, but increase constantly throughout the year.

The communicable diseases rank fourth as causes of deaths of babies, one-sixth of them occuring during the first month of life and five-sixths after the first month.

Maternal Mortality in Montana

Table IX following contains the maternal mortality rates for Montana from 1910 through 1925. (Rates 1910-1919 are taken from John J. Sippy Public Health Reports, April 14. 1922.)

1910	10.3	1918	12.8
1911	10.3	1919	11.8
1912	9.2	1920	8.8
1913	9.2	1921	7.6
1914	10.0	1922	7.8
1915	8.1	1923	7.5
1916	9.6	1924	7.1
1917	10.9	1925	8.0

From the table it will be observed that the last five years the rates are all lower than the first five years. A straight line fitted through the rate for the sixteen years to ascertain the slope or trend of maternal mortality, shows that at the end of the period there are at least two less deaths of women from child birth per 1000 live births than there were at the beginning of the period. This means that with something over

10,000 births occurring in the state during the last few years that 20 less mothers die each year due to child birth than would have died had the rates of sixteen years ago prevailed today.

Table X. Total births registered, deaths from all puerperal causes, deaths from puerperal septicemia and other than puerperal septicemia, and the death rates per 1000 live births, 1921-1925.

Year	Live Births	Total Puerperal	Rate	Puerperal Septicemia	Rate	Other Puerperal	Rate
1921	12,127	92	7.6	46	3.8	46	3.8
1922	11,060	86	7.8	40	3.6	46	4.2
1923	10,524	79	7.5	39	3.7	40	3.8
1924	10,283	73	7.1	32	3.1	41	4.0
1925	10,302	83	8.0	30	2.9	53	5.1

Table XI. Deaths from puerperal diseases and conditions in Montana, 1921-1925.

Int. No.	Disease or Condition	1921	1922	1923	1924	1925
143	Accidents Pregnancy	10	8	6	5	10
144	Puerperal Hemorrhage	6	3	6	5	9
145	Accidents of Labor	5	8	1	5	5
146	Puerperal Septicemia	46	40	39	32	30
147	Puerperal Phlegmasia	3	10	0	2	1
148	Puerperal Albuminuria and Convulsions	18	13	9	19	16
149	Following Child Birth	4	4	9	5	12
	Total	92	86	70	73	83

During the past five year period, 1921-1925, the trend line for total puerperal deaths shows that there has actually been a slight increase in the death rate from these causes and conditions. The only outstanding feature of this is the fact that there has been a constant reduction in puerperal septicemia, which amounts to one less death per 1000 of live births in 1925 than occurred in 1921, five years previous. This reduction from the one cause has been balanced by increases in other puerperal deaths and particularly those following child birth.

From Table XI it will be observed that there has been a constant reduction in deaths from puerperal septicemia through the five years. In 1921 there were 46 deaths from this cause; then 40, 39, 32 for the years 1922, 1923 and 1924, respectively, and only 30 from this cause in 1925. The maternal mortality rate for this same cause shows a constant decrease during the five years excepting 1923, which was 0.1 per 1000 higher than 1922 and was due to the falling off of the number of births occurring during 1923 as compared to 1922. There were only 10,524 births registered in 1923 as against 11,060 in 1922, a decrease of 536.

While there was a decrease in puerperal septicemia, there was a constant increase in cause of deaths "following child birth." In 1921 there were only four deaths from this cause, while there were 12 deaths in 1925, with an increase each year excepting 1924, which was lower than 1923. For all other puerperal causes there are no noticeable increases or decreases through the five years.

There has been a constant decline in the births registered from 1921 through 1924. In 1925 there was a slight increase as compared to 1924. The total deaths from puerperal septicemia shows the same condition, i. e., there was a constant decrease from 1921 through 1924 and then an increase in 1925, which caused more deaths that year than in either 1923 or 1924, but not so many as were listed in 1921 and 1922.

The rapid falling off of the number of births occurring makes a difference in the death rate as the rate is figured from the number of live births. We, therefore, have a slight rise in maternal death rate in 1922 over 1921, then a decrease through 1923 and 1924, then a rise in 1925, which exceeds that of any of the other four preceding years.

There is a constant decrease in the actual number of deaths from puerperal septicemia through the five years, but due to the same reason as above, the falling off of the number of births makes a slight increase in the septicemia deaths in 1923 over 1922, but through the five year series shows at least one less mother dying from this cause per 1000 live births in five years, which is indeed very gratifying. But the disturbing factor is that while the death rate from puerperal septicemia has constantly decreased, there has been an increase in other puerperal causes and conditions which more than offset the first and cause the death rate from all puerperal causes to show a slight increase over the five years.

Quoting Dr. Louis I. Dublin*:—

"The important point for us, however, is that this last decade, which has seen such remarkable improvement in our control of so many of the preventable causes of death, has left us with virtually no improvement in the matter of maternal mortality. Yet, mind you, there has been this failure in spite of the work of this association, and in spite of the very general knowledge of the unfavorable situation throughout the country. The Children's Bureau, the public press, the women's clubs, and the visiting nurse associations have all concentrated on this condition and, apparently, they have accomplished nothing. I am especially disturbed by the fact that we have failed in spite of the determined efforts of the visiting nurse associations. Do you know that maternal nursing has become with the last few years the most important single activity of the public health nursing organizations? If the present tendency continues, close to one-half of the cases which nursing organizations take care of will be for the care of women in pregnancy or post-partum. In fact, there are already a number of large nursing organizations of the very best standing which give close to one-half of their nursing visits to women in pregnancy or post-partum. This was not so ten years ago. A tremendous interest has grown in the care of the perturient women, stimulated largely by the work of this association and of the Children's Bureau, and yet we find ourselves at the end of the decade virtually where we were at the beginning.

" * * * The Directors of the association apparently thought that all that was necessary was a pre-natal service. They forget that a perfectly splendid piece of pre-natal work could be ruined through bad obstetrics. And that is exactly what happened.

"The important point I wish to leave with you is that, in order to attack successfully the problem of maternal mortality, you must make ample provision for good obstetrical service in addition to the usual type of pre-natal care. The pre-natal service alone will not do the work. Prenatal work will do some things, but it will not do everything.

"I do not wish to be misunderstood. I would be very much grieved if anything I have said were interpreted as a slur on the importance of pre-natal work as it is done at present. There is no indication for lessening the emphasis on pre-natal work, but rather for making it much more intensive. The pre-natal service must change itself over into a complete maternal service if it would be successful. It must, in fact, find a means either for providing safe confinement service, or, through its affiliated agencies, it must be able to direct its patients toward a safe confinement. In many places this will mean that the pre-natal service must undertake to improve the facilities of the maternity hospitals and of the other agencies providing obstetrical care."

*"Discussion of Dr. W. J. Bell's Paper on Maternal Mortality" by Louis I. Dublin, Ph. D., Metropolitan Life Insurance Company, delivered at the 13th Annual Meeting, American Child Hygiene Association.

Summary

1. The Maternal death rate over the sixteen years, 1910-1925, would indicate that there are two less deaths per 1000 births from these causes occurring now than there were at the beginning of the period.

2. During the five year period 1921-1925 there has been a slight rise in maternal mortality.

3. The rates suggest that there is a downward trend for deaths from puerperal septicemia during the last five years, but that deaths from other puerperal causes offset this enough to make the total deaths from these causes and conditions slightly on the increase.

LIFE TABLE FOR MONTANA 1920

(Based on the Census count of population January 1, 1920, 548,889 and on the reported deaths for 1919-1920-1921.)

Age Interval (Years)	Of 100,000 born alive		Rate of Mortality per 1,000	Complete Expectation of life
Period of lifetime between two exact ages	Number alive at beginning of age interval	Number dying in age interval	Number dying in age interval among 1,000 alive at beginning of age interval	Average length of life remaining to each one alive at beginning of age interval
x to x+1	1x	dx	1,000qx	ex
Life Table for Whole Range of Life by Age Intervals of One Year.				
0- 1	100,000	6,822	68.22	58.80
1- 2	93,178	1,129	12.12	62.09
2- 3	92,049	446	4.85	61.85
3- 4	91,603	364	3.97	61.14
4- 5	91,239	336	3,68	60.39
5- 6	90,903	282	3.10	59.61
6- 7	90,621	242	2.67	58.79
7- 8	90,379	214	2.37	57.95
8- 9	90,165	197	2.18	57.08
9-10	89,968	188	2.09	56.21
10-11	89,780	188	2.09	55.32
11-12	89,592	194	2.16	54.43
12-13	89,398	206	2.30	53.55
13-14	89,192	221	2.48	52.68
14-15	88,971	241	2.71	51.84
15-16	88,730	263	2.96	50.95
16-17	88,467	286	3.23	50.10
17-18	88,181	310	3.51	49.26
18-19	87,871	332	3.78	48.43
19-20	87,539	354	4.04	47.61
20-21	87,185	376	4.31	46.80
21-22	86,809	387	4.46	46.00
22-23	86,422	398	4.61	45.21
23-24	86,024	408	4.74	44.41
24-25	85,616	417	4.87	43.62
25-26	85,199	425	4.99	42.84
26-27	84,774	433	5.11	42.05
27-28	84,341	441	5.23	41.26
28-29	83,900	448	5.34	40.48
29-30	83,452	455	5.45	39.69
30-31	82,997	461	5.55	38.90
31-32	82,536	467	5.66	38.12
32-33	82,069	474	5.77	37.33
33-34	81,595	480	5.88	36.55
34-35	81,115	487	6.00	35.76
35-36	80,628	493	6.12	34.97
36-37	80,135	601	6.25	34.19
37-38	79,634	502	6.30	33.40
38-39	79,132	518	6.55	32.61
39-40	78,614	528	6.72	31.82

LIFE TABLE FOR MONTANA 1920—(Continued)

(Based on the Census count of population January 1, 1920, 548,889 and on the reported deaths for 1919-1920-1921.)

Age Interval (Years)	Of 100,000 born alive		Rate of Mortality per 1,000	Complete Expectation of life
Period of lifetime between two exact ages	Number alive at beginning of age interval	Number dying in age interval	Number dying in age interval among 1,000 alive at beginning of age interval	Average length of life remaining to each one alive at beginning of age interval
x to x+1	lx	dx	1,000qx	ex
Life Table for Whole Range of Life by Age Intervals of One Year.				
40-41	78,086	540	6.91	31.03
41-42	77,546	552	7.12	30.24
42-43	76,994	567	7.36	29.46
43-44	76,427	582	7.62	28.67
44-45	75,845	601	7.92	27.89
45-46	75,244	621	8.25	27.10
46-47	74,623	643	8.62	26.33
47-48	73,980	669	9.04	25.55
48-49	73,311	697	9.51	24.78
49-50	72,614	729	10.04	24.01
50-51	71,885	764	10.63	23.25
51-52	71,121	803	11.29	22.50
52-53	70,318	845	12.02	21.75
53-54	69,473	892	12.84	21.00
54-55	68,581	942	13.74	20.27
55-56	67,639	997	14.74	19.55
56-57	66,642	1,056	15.85	18.83
57-58	65,586	1,120	17.08	18.13
58-59	64,466	1,188	18.43	17.43
59-60	63,278	1,260	19.92	16.75
60-61	62,018	1,336	21.55	16.08
61-62	60,682	1,416	23.34	15.42
62-63	59,266	1,499	25.30	14.78
63-64	57,767	1,586	27.45	14.15
64-65	56,181	1,674	29.79	13.54
65-66	54,507	1,763	32.35	12.94
66-67	52,744	1,853	35.13	13.35
67-68	50,891	1,943	38.16	11.78
68-69	48,948	2,029	41.45	11.23
69-70	46,919	2,112	45.02	10.70
70-71	44,807	2,190	48.88	10.18
71-72	42,617	2,262	53.07	9.67
72-73	40,355	2,324	57.60	9.18
73-74	38,031	2,377	62.49	8.72
74-75	35,654	2,417	67.78	8.27
75-76	33,237	2,442	73.47	7.83
76-77	30,795	2,451	79.60	7.41
77-78	28,344	2,443	86.20	7.01
78-79	25,901	2,417	39.30	6.63
79-80	23.484	2,370	100.93	6.26

LIFE TABLE FOR MONTANA 1920—(Continued)

(Based on the Census count of population January 1, 1920, 548,889 and on the reported deaths for 1919-1920-1921.)

Age Interval (Years)	Of 100,000 born alive		Rate of Mortality per 1,000	Complete Expectation of life
Period of lifetime between two exact ages	Number alive at beginning of age interval	Number dying in age interval	Number dying in age interval among 1,000 alive at beginning of age interval	Average length of life remaining to each one alive at beginning of age interval
x to x+1	lx	dx	1,000qx	ex
Life Table for Whole Range of Life by Age Intervals of One Year.				
80-81	21,114	2,304	109.12	5.90
81-82	18,810	2,218	117.90	5.56
82-83	16,592	2,112	127.32	5.24
83-84	14,480	1,990	137.41	4.93
84-85	12,490	1,851	148.20	4.64
85-86	10,639	1,700	159.75	4.36
86-87	8,939	1,538	172.09	4.09
87-88	7,401	1,371	185.28	3.84
88-89	6,030	1,202	199.36	3.60
89-90	4,828	1,035	214.38	3.37
90-91	3,793	874	230.40	3.16
91-92	2,919	722	247.46	2.95
92-93	2,197	584	265.64	2.76
93-94	1,613	458	284.00	2.58
94-95	1,155	353	305.59	2.40
95-96	802	263	327.49	2.24
96-97	539	189	350.77	2.08
97-98	350	131	375.50	1.94
98-99	219	88	401.76	1.80
99-100	131	56	429.63	1.68
100-101	75	34	459.20	1.55
101-102	41	20	490.56	1.43
102-103	21	11	523.81	1.31
103-104	10	6	559.04	1.20
104-105	4	2	596.36	1.25
105-106	2	1	635.86	1.
106-107	1	1	677.68	1.
107	0			

The life table represents a hypothetical population born at a given time or interval under conditions as they existed in Montana in 1920.

The 1x column represents or begins with the 100,000 hypothetical births and carries them through each year until the 100,000 are all dead. The column shows the number of survivors of the original 100,000 at the beginning of each succeeding age interval.

The dx column shows the number of deaths to be expected under Montana 1920 conditions for each age interval.

The qx column gives the death rate specific for each year of age, throughout life.

The ex column represents the number of additional years the average persons in each age group may expect to live.

It will be noted the Montana conditions in 1920 show that one-half or 50,000 of the original 100,000 would reach the age of 67, which is a two-year longer period than the aggregate for twenty-seven states and the District of Columbia that year. The average for this group of the Registration Area in 1920 was 65 years.

In 1901 a baby born in the U. S. Registration Area might expect to live 49.24 years; this expectation of life had risen to 56.43 years in 1920 and 57.32 years in 1925. Under Montana conditions in 1920 a child at birth had a life expectancy of 58.80 years (1x column) and if it survived that eventful year it would have a life expectancy of 62.09 years on reaching its first birthday.

Only five states in the Registration Area in 1920 showed greater life expectancy at birth than did Montana. They were Kansas, Wisconsin, Minnesota, Oregon and Washington in the order named, ranging from 60.42 to 59.15 years.

STATE HYGIENIC LABORATORY AND DIVISION OF SOCIAL HYGIENE

J. X. Newman, Director

The Laboratory

Purpose. The purpose of the laboratory is to aid, by diagnosis and research, the fight to overcome disease. This aid is given free of cost to the public through the practicing physicians.

The laboratory served the people through 103 city and county health officers, 392 medical practitioners, 57 dentists, 28 osteopathic physicians, and 13 chiropractors during the biennium. Every county in the state was represented by specimens. The distribution of specimens were in direct proportion to the population of the areas from which they came.

Since 1920 the number of specimens handled has increased 376%.

In 1923 and 1924—18,281 specimens were received and examined.

In 1925 and 1926 (to Oct. only)—24,976, or an increase of this biennium over the last of 39%.

The routine diagnosis of infectious disease forms the major portion of the activities of the laboratory, but insofar as our resources permit, aid has been given physicians, health officers and county commissioners in locating the sources of infection such as diphtheria, typhoid and scarlet fever "carriers." This is one of the functions of a public health laboratory and it is hoped that the work in this field may be expanded in the future.

To November 1, 1926, the report shows a total of 24,976 examinations. At the very lowest prevailing prices for this work, the cost would have exceeded $117,000. All this work is done without charge, the public benefiting to this extent. In addition, the detecting and curbing of infectious sources through the available laboratory facilities, accurate and early diagnosis, and prompt reports, prevents progress in the march of infection and hastens recovery from diseases. No monetary value can be placed on these factors. This service can be compared to an active fire department of a community in its service to prevent conflagration.

The laboratory aims to maintain and keep in readiness an equipment suitable to meet all emergencies or peak loads. In addition, we attempt to keep posted and abreast of the bacteriological, serological and immunological discoveries and advances. This is accomplished through leaflets, and exchange letters from laboratories in other states, and through our library, consisting of books, journals and bulletins. We attempt to furnish to physicians the information obtained from these periodicals when it is requested by them.

All of Montana's health activities are under the direction and coordination of the Secretary of the State Board of Health. They are all carried on under one roof. This makes coordination between the laboratory and other health activities possible, and accelerates the final decision. In states where the laboratory is separated from the Department of Vital Statistics, of Water and Sewage, and of Food and Drugs, such coordination is delayed and its inter-communication and correlation expensive.

The means available of coordinating all health activities, as well as using equipment interchangeably with the other two laboratories, has been instrumental in placing the cost per specimen examined in the Montana laboratory near the bottom of the list of the State Hygienic Laboratories in the U. S.

The laboratory serves the State institutions through their physicians. In two of the State institutions a complete survey of the venereal disease status has been established through our laboratory examination. The examinations continue until the patients are cured or are discharged.

A tabulated statement of the work done during the years 1925 and 1926 (to Nov. 1st) is appended.

The Division of Social Hygiene

The Division of Social Hygiene of the State of Montana cooperates with the Division of Venereal Diseases of the United States Public Health Service in carrying out the state and federal program relating to the various phases of Social Hygiene.

During the biennium 1924 and 1925 no appropriation was made to carry on the work. The responsibility of the administration of this division was placed without further compensation into the hands of the Director of the Hygienic Laboratory. During this period the division has aided in the campaign against venereal disease by the following methods.

Supplied 1062 doses arsphenamine free to indigents.

Made 15,858 Wassermann tests for syphilis.

Made 966 examinations for gonorrhea.

Made 40 examinations relating to gonorrheal blindness.

Distributed 27,000 Social Hygiene pamphlets requested.

Answered 300 letters relating to treatment.

Gave 104 lectures and showed films to an attendance of about 20,000.

BIENNIAL REPORT—HYGIENIC LABORATORY

BLOODS	1925	1926*
Agglutinations, Typhoids, etc.	1029	837
Chemical	82	25
Coagulation	47	9
Counts and Differential	257	84
Culture	30	39
Complement Fixation GC.	29	27
Grouping	21	21
Wassermann Reactions	8086	7147
CULTURES		
Diphtheria	1234	1289
Gonococci	33	92
Miscellaneous	1	10
FECES		
Bacteria—Typhoid, etc.	59	144
Chemical	9	11
Parasites	21	28
Gastric Analysis	15	15
MILK		
Bacteria—Infections	58	25
Chemical—Human Milk	32	31
SMEARS		
Bacteria—Eyes, Skin, etc.	27	266
Dark-field	3	12
Gonococci	513	453
Leprosy	7	3
Vincent's Angina	8	141
SPINAL FLUIDS		
Bacteria—Meningicocci, etc.	13	12
Colloidal Gold	227	146
Globulin Increase	22	18
Wassermann Reactions	232	156
SPUTUM		
Bacteria—Pneumococci, etc.	17	12
Tuberculosis	488	457
URINES		
Chemical—Microscopical	300	227
Chemical—Quantitative	43	13
Inoculations	10	18
Typhoids	18	130
Vaccines—Autogenous	65	17
Miscellaneous	15	10
Total	13,051	11,925
Grand Total		25,976

*Through October 1926 only.

1919-1920	10,451
1921-1922	17,920
1923-1924	18,312
1925-1926	24,976 (to October 31, 1926 only)

REPORT OF THE DIVISION OF WATER AND SEWAGE.

Biennial Period Ending October 31, 1926.

W. M. Cobleigh, Consultant.
H. B. Foote, Director.
H. D. Cashmore, Assistant.

The principal work of the Division of Water and Sewage is comprised of the following activities:

1. Bacteriological and chemical examination of water samples of both public and private supplies.
2. Field inspection of public and private water supplies.
3. Inspection of plans for public water supplies.
4. Field inspection of sewage disposal systems.
5. Ispection of plans for public sewage disposal systems.
6. Inspection of tourist camps and their water supplies.
7. Inspection and approval of plans for public school buildings.

The assistant is available to the Division of Food and Drugs for assistance in his laboratory operations. A limited amount of interchange of work is also made with this division in the field whereby economy is effected.

Laboratory Analysis of Water.

The analysis of samples of water makes up the bulk of the laboratory work. A check upon the condition and operation of water supplies is obtained by frequent routine bacteriological analysis. In order that each supply will receive proper attention at regular intervals, a calendar has been prepared which lists for each week the supplies to which sampling equipment is to be sent. The equipment is usually sent out on Wednesday.

The State Board of Health owns a considerable number of insulated shipping cases and bottles which are used for the collection and shipment of samples. These are sent by express, properly sealed, to the collector, who after collection of samples packs them with ice, seals and returns them to the laboratory by express, charges collect. The collector is usually the local water superintendent or the health officer, who is carefully instructed in the matter.

This system works very satisfactorily in our extensive territory where the visiting of supplies is attended by considerable expense. The local collectors for the most part cooperate in a very satisfactory way so that little delay due to their failure to collect is experienced.

For the sealing, a self-locking tin seal is used on which is stamped the name of the State Board of Health, and a number for identification.

LABORATORY WORK

Water and Sewage Division.
Period November 1, 1924, to October 31, 1926.

Source of Samples	1924 Nov. & Dec.		1925		1926 Jan. 1–Oct. 31		Totals
	Bact.	Chem.	Bact.	Chem.	Bact.	Chem.	
Public Water Supplies	264	5	2748	17	2285	12	5331
Private Water Supplies	43	11	253	78	179	36	600
Proposed Public Water Supplies		1		11	14	15	41
School Water Supplies	8	1	35	4	31	8	87
Railway Water Supplies	3		38	3	57	2	103
Tourist Camp Water Supplies			15				15
Ice	1		10	2	1		14
Swimming Pools and Hot Springs Resorts	16		6		5		27
Indian Agency and U. S. Government Supplies			145	4	138		287
Miscellaneous			5	4	26		35
Totals	335	18	3255	123	2736	73	6540
	353		3378		2809		
Previous Biennial Period	363		2743		2545		5381

Field Inspections.

Practically all field work is done by railway travel since the water supplies and sewage disposal systems are in towns touched by the railroads. It is the intention and endeavor of this division to see each supply once a year and the larger, and especially the purification plants, oftener.

When in a given city, private water supplies, swimming pools, ice fields and tourist camps are visited in addition to the public structures. It is our wish to do more rural work but funds are limited.

The fee system inaugurated in 1917 is in force. The fees so collected are based upon the source of the water supply and the population served.

The following tabulation shows the extent of the field work for the previous two years:

FIELD WORK

Water and Sewage Division.
Period November 1, 1924, to October 31, 1926.

Type of Plant Investigated	1924 Nov. & Dec.	1925	1926 Jan. 1 to Oct. 31	Totals
Public Water Supplies	4	99	85	188
Private Water Supplies	2	36	15	53
Proposed Public Water Supplies			3	3
Railway Water Supplies	1	8	7	16
School Water Supplies		16	2	18
Tourist Camps		24	14	38
Hot Springs and Other Resorts	2	1	2	5
Ice Supplies		1		1
Sewage Works	1	22	28	51
Miscellaneous		7	4	11
Totals	10	214	160	384
Previous biennial period	9	203	225	437

Liquid Chlorine Disinfection

The use of this material for disinfection of water has come into common use because of its relative economy and high efficiency, especially in waters of low turbidity. One authority states that seventy-five per cent of the people in North America drink water that has been chlorinated. It is obviously true that water which needs no purification is preferable to that which is contaminated and requires it, but it is also obviously better to use chlorine than to risk the appearance of typhoid fever and such other diseases as might occur otherwise.

An average dose in Montana into a water not heavily contaminated is two pounds per million gallons. In some, one pound is sufficient. Such an amount does not ordinarily produce any foreign tastes or odors, nor is it an amount which will in any way affect the human system.

There are twenty-nine of these installations in the state including those in filtration plants. Hypochlorite of lime or chlorinated lime is used in four communities. The same effect is obtained as with liquid chlorine though it is more difficult to obtain a uniformly adequate and satisfactory dosage. Listed, these plants are as follows:

Number of chlorine machines in filtration plants	9
Number of chlorine machines other than in filter plants	20
Number of hypochlorite of lime plants	4
Approximate population supplied with such treated water	154,000

There is now available to any operator a delicate and simple test for the determination of the proper dosage of chlorine. This is the ortho-tolidin test for excess of chlorine. The method of use appears below. The ortho-tolidin may be obtained upon application to the State Board of Health. The test is used by most operators.

Ortho-tolidin Test

To a glass tumbler* half full of water to be tested, add twenty drops of ortho-tolidin and allow to stand at least five minutes. Small amounts of free chlorine will give a yellow color and larger amounts an orange color. Fifteen minutes should have elapsed between the application of the chlorine to the water and the making of the test.

To detect a slight color, it would be well to have a second glass or tumbler containing an equal amount of water to which no ortho-tolidin has been added. By comparison of the two the slightest change in color may be detected.

*Or use two clear glass tubes of 150 c.c. capacity taking 100 c.c. in each. Standard colors for comparison may be used.

Certification of Water Supplies Furnished by Common Carriers

This work is carried on as heretofore in cooperation with the United States Public Health Service. We are able to certify to all of the supplies listed in the state, although at one point we hope to see a better arrangement made soon.

Public School Buildings and Water Supplies

The approval of the State Board of Health is required for all new school buildings as regards lighting, heating and ventilation. Surveys of schools, especially those of rural districts, show a need of more attention to water supply. The work in this line is going steadily forward in cooperation between the local school and health boards and the State Board of Health.

Inspection of Building Plans

The past two years has seen a dearth in building, especially of municipal water and sewage systems. The following tabulation shows the number of building plans examined, November 1, 1924 to October 31, 1926.

Water Supply	3
Sewage Disposal	2
School Buildings	32
Total	37

Cross Connections

The close of this biennium brings us to the point which shows the necessity of regulations regarding cross connections between public water supplies and private auxiliary supplies.

The following regulation therefore was drawn up for presentation to the State Board of Health at its October meeting, and was adopted.

Part VII. Rule 26

CROSS CONNECTIONS.

(a) A cross connection is herewith defined as a physical arrangement whereby a public water supply system is connected with another water supply system, either public or private, in such a manner that a flow of water into the public water supply system from such other water supply system is possible.

(b) Hereafter no plans for the construction of a public water supply system containing provisions for cross connections as defined above, shall be approved by the State Board of Health; providing that the secondary supply is of unsatisfactory quality and will endanger the purity of the public supply.

(c) Beginning from the date of the adoption of this rule, cities and towns in which there exist cross connections as above defined, shall take such steps as are necessary to eliminate cross connections by July 1, 1927.

Montana Section American Water Works Association

On February 6, 1925 at a meeting of several water department superintendents in Helena, it was decided to form a state section of the A. W. W. A. The required membership was secured following this, and on August 23, 1925 the executive committee's acceptance of our request for a state section was transmitted.

The first annual meeting was held in Butte April 15-17, 1926. At this time there are thirty resident members. The second meeting will be held in Billings the early part of 1927. Mr. Willett, superintendent of the Billings city water department is president, Mr. Thane of the Missoula Public Service Company is vice-president, and Mr. Foote of the State Board of Health staff at Helena is secretary-treasurer.

Bulletins and Articles

A bulletin from the division entitled "The Analysis of Water, Its Meaning and Use" has been issued. This is a popular treatment of the subject for the uninformed citizen.

Articles for publication in various state papers have been written on the subjects of Farm Water, Farm Sewage Disposal, and the Treatment of Polluted Water in Cisterns.

Typhoid Fever

We saw our typhoid fever rates decreased in 1924, over previous years, but in common with the country at large we had a greater incidence and death rate in 1925. The death rate this year, 1926, promises to be lower than ever before. The death rates as calculated for 100,000 people are as follows:*

1923	3.3
1924	2.5
1925	4.6
1926 (estimate based on deaths reported to Sept. 30, 1926)	1.7

*Based on 1920 census of 548,889.

REPORT OF THE FOOD AND DRUG DIVISION

W. M. Cobleigh, Consultant, Bozeman
G. D. Wiles, Director, Helena

The activities of the Food and Drugs Division may be briefly summarized as follows:

1. Enforce the provisions of the Pure Foods and Drugs Act of 1911 relative to adulterated and misbranded foods and drugs.
2. Make laboratory analysis of foods and drugs to determine whether or not they are adulterated or misbranded.
3. Issue licenses to all of the following establishments in the state, as required in Section 2589, R. C. M. 1921: Restaurants, Cafes, Lunch Counters, Dining Cars, Manufacturing Bakeries, Manufacturing Confectioners, Meat Markets, Canneries, Soda Fountains, Ice Cream Parlors, Soft Drink Establishments or Bottling Works.
4. Enforce sanitary regulations governing food handling establishments.
5. Cooperate with local and county health officers in making regular sanitary inspection of food handling establishments.

During the past biennial period there has been a pronounced increase in the various activities of the Food and Drugs Division.

Licenses

A separate license is required for each of the classes of business listed below:

1. Public Eating Places.
2. Meat Markets.
3. Manufacturing Bakeries.
4. Manufacturing Confectioneries.
5. Soda Fountains, Ice Cream Parlors and Soft Drink Establishments.
6. Canneries.
7. Bottling Works.

Licenses are secured upon application to the State Board of Health, the fee being two dollars for each license. Since the enactment of the law in 1921 the following sums have been collected and turned in to the State Treasurer to be placed in the general fund:

For the year 1922	$ 5,948.00
For the year 1923	6,128.00
For the year 1924	5,846.00
For the year 1925	6,256.00
For the year 1926 (to Nov. 1st)	6,880.00
Total	$31,058.00

Inspections

Annual inspections are made of hotels in the state by local and county health officers as required by the State Hotel Law.

Rules and regulations have been adopted by the State Board of Health governing sanitary conditions in food handling establishments. These rules and regulations are enforced by local and county health officers in cooperation with representatives of this division. A monthly inspection is required of all licensed places, together with grocery stores, the establishments being scored on score cards furnished by this department. All score cards are given separate attention when returned and when necessary parties are ordered to comply with state regulations. Health officers are credited with the number of score cards returned to this department. Doubtless many inspections are made by local and county health officers where no score cards are filled out and mailed in, hence the total inspections will be greater than given below. Score cards received from local and county health officers for the biennial period total 19,548. During the same period 4.029 sanitary inspections were made by inspectors from the State Board of Health, Food and Drugs Division. Representatives of the Water and Sewage Division and Bureau of Vital Statistics have assisted in making these inspections.

In order to maintain close cooperation with local and county health officers it is the aim of the State Board of Health to make inspections once a year of all licensed places throughout the state. Insofar as funds will permit this is being done.

The State Board of Health is aware of the fact that sanitary conditions in food establishments are not as they should be in all cases but we contend that a maximum amount of work is being done for the amount of money provided.

Prosecutions and Licenses Cancelled

During the past biennial period proceedings were instituted against the following parties for violation of the Food and Drug Act:

O. Van Nortwick	Stanford	Adulterated Hamburger
John Laur	Great Falls	Adulterated Hamburger
H. Quackenbush	Moore	Adulterated Hamburger
Nollar & Marto	Shelby	Adulterated Hamburger
George W. Sturm	Billings	Adulterated Hamburger
Nicholas Benham	Butte	Adulterated Hamburger
Henry Schmidt	Red Lodge	Adulterated Hamburger
H. J. Helgeson	Milltown	Adulterated Hamburger
Beadle & Wagner	Milltown	Adulterated Hamburger
Bordeau Bros.	Missoula	Adulterated Hamburger
Schramm & Hebard	Missoula	Adulterated Hamburger
John Laur	Great Falls	Adulterated Oysters
N. E. Gourley	Havre	Failure to take out license
C. A. Matthew	Whitefish	Failure to take out license
Willey's Bakery and Soda Fountain	Stevensville	Failure to take out license
F. J. Davies	Laurel	Failure to take out license
Argo Beverage Co.	Billings	Failure to take out license
Otto Baur	Charlo	Failure to take out license
Mr. Smith, Cozy Cafe	Culbertson	Failure to take out license
Mrs. L. T. Smith	Joliet	Failure to take out license
J. J. Skeen	Judith Gap	Failure to take out license
C. A. Goodman	Judith Gap	Failure to take out license
J. V. McCarthy	Dillon	Failure to take out license

H. T. Shafer	Circle	Failure to take out license
J. F. Murray	Malta	Failure to take out license
Berry Stevens	Scobey	Failure to take out license
Roy Page	Great Falls	Failure to take out license
D. F. Sullivan	Edgar	Failure to take out license
Wm. Nichols	Savage	Failure to take out license

Fines collected are turned into the general fund, as required by law.

In cases where sanitary regulations are not complied with, within a reasonable degree, the Secretary of the State Board of Health is given authority to cancel a Board of Health license. Acting under this authority the Secretary cancelled the following licenses:

Haupt and Stevens	Lewistown	Insanitary Cafe
Chas. Hum	Big Timber	Insanitary Cafe
J. Kapanos	Bozeman	Insanitary Manufacturing Conf.
Carl Stahl	Butte	Insanitary Meat Market

Food and Drug Laboratory Report

The number of food and drug samples analyzed during the biennial period greatly exceeds the number examined during the previous biennial period. The following laboratory analyses have been made:

Total samples examined	926	
Samples classified as "passed"	649, or	70.1%
Samples classified as "not passed"	255, or	27.5%
Samples "not classified"	22, or	2.4%

An arrangement has been made with the Dairy Division, Department of Agriculture, whereby the Food and Drug Laboratory makes analysis of butter and ice cream collected by their inspectors. Through elimination tests only samples of butter are submitted which show evidence of adulteration. Samples have been analyzed for the Dairy Division as follows: Butter 10, Ice Cream 46, Milk 2. A nominal charge is made for this work.

In order to show the wide diversity of foods and drugs analyzed, the following list representing samples examined in the laboratory, is given: Coffee, preserves, face cream, candy, hamburger, soft drinks, butter, ice cream, sugar, lard, oysters, peas, corn, sauerkraut, pork and beans, beans, canned beef, water, sausage casing dye, hamburger preservatives, pumpkin, cheese, mince meat, sandwich spread, salad dressing, vinegar, bran cereal, tonics, canned salmon, celery, grapes, canned strawberries, canned raspberries, loganberry preserves, egg noodles, spaghetti, cherries canned, mustard, horseradish, honey, peanut butter, shoe polish, canning compound, sweet relish, pimento, stuffed olives, shrimp, syrup, mineral food, weiners, wine vinegar, powdered egg yolk, canned tomatoes, formaldehyde, vanilla extract, kippered herring, chili con carne, buckwheat flour, oatmeal, milk, codeine and other drugs.

The director of the Food and Drugs Division acts as supervisor of inspection work done by local and county health officers, acts as inspector, purchases food and drug samples for analysis, acts as analyst in the Food and Drug laboratory, looks after licensing of food establishments, is a representative with power to act under the Bureau of Chemistry, U. S. Department of Agriculture, in the enforcement of the National Pure Food Law.

In cooperation with the Bureau of Chemistry U. S. Department of Agriculture, the following interstate shipments of food products have been handled:

Jam, adulterated and misbranded—40 cases.
Preserves and Jam, adulterated and misbranded—2 cars and 25 cases.
Imitation Vanilla Extract, adulterated and misbranded—several hundred cases.
Coffee, adulterated and misbranded.
Minced Clams, adulterated, misbranded, short weight—437 cases.
Jam, adulterated and misbranded—250 cases.
Olives, decomposed.
Tomato Puree, misbranded.
Pears, excessive arsenic sprayed—5 shipments.
Drugs, patent, misbranded.
Egg Noodles, adulterated and misbranded.
Oysters, adulterated and misbranded.
Table Syrup. two shipments misbranded.
Cereal, misbranded.
Sardines, decomposed—185 cases.
Cream Purifier Compound.

The Food and Drugs Division is more than self supporting. Considerable more money is collected through license fees and fines than is appropriated for carrying on the work of the division. It is hoped that the legislature will see the wisdom of appropriating a sum of money at least equal to the amount collected by the division, so that more efficient work could be done in improving sanitary conditions throughout Montana.

Montana with its increasing number of sugar factories, canning factories, flour mills, and other food manufacturing establishments is rapidly taking a prominent part in food manufacture. The total number of licenses issued is increasing steadily from year to year. The amount of laboratory and field work necessary to properly regulate these businesses is increasing proportionately.

REPORT OF THE CHILD WELFARE DIVISION

Biennial Period Ending October 31st, 1926

Hazel Dell Bonness, M. D., Director

The state legislature of 1925 appropriated the sum of $8,700 per year for the protection of maternity and infancy. This sum was matched by the federal government (under the Sheppard-Towner Act) and an additional $5,000 was added as a gift. For the appropriation of $8,700 by the Montana legislature, the state receives annually the sum of $22,400 for use in the protection of maternity and infancy. In addition to this sum, the legislature appropriated $2,000 annually to be used for school and other public health work delegated by state law to this division.

Chapter 121, Session Laws 1917, creating the Division of Child Welfare of the State Board of Health, delegates to it the following duties: To make and enforce regulations to carry on a campaign of public health education; to take all possible steps toward the better protection of the health of the children of the state; to formulate rules and regulations governing public health nursing in the state and to have full power of supervision and regulation of such nurses. The work of the division was necessarily somewhat limited previous to the enactment of the Federal Maternity and Infancy Act because of the restriction of funds. Since 1923, however, its scope of work has been greatly increased, and public health education for the betterment of mothers and their children has been carried to every corner of the state.

The activities of the Child Welfare Division for the past two years have been as follows:

Cooperative Projects

Cooperation with other divisions of the State Board of Health.

1. Vital Statistics.

During the past two years this division has maintained one clerk for the Division of Vital Statistics. This has made possible a series of special studies on vital statistics which have been of great help not only to this division but also to the Board of Health during this period. In cooperation with the Division of Vital Statistics, we have also carried on a constant campaign to increase our birth registration.

2. Hygienic Laboratory.

The Division of Child Welfare has employed a full-time laboratory technician for the Hygienic Laboratory whose work has been of routine character being confined largely to urine analyses, sputum, blood and diphtheria culture examinations for women and children. In addition, the Child Welfare Division distributes silver nitrate, free of charge, to physicians, nurses and hospitals for use in the prevention of ophthalmia neonatorum.

3. This division is also cooperating with the Division of Water and Sewage in its school plan work and has been able to assist that division in the examining of school buildings. Constant cooperation is had with the Food and Drug Division by means of frequent conferences with the director on matters pertaining to the safeguarding of foods for children.

Cooperation With Other Health Agencies

This division has been very fortunate in its cooperative undertakings with other agencies such as the Montana Tuberculosis Association, the American Red Cross, county health units, boards of county commissioners and the Extension Service of the State College.

1. Our cooperative plan of work with the Montana Tuberculosis Association has resulted in a great saving in expense and in the elimination of duplication of work. During the biennial period the division has maintained three field nurses and the association one. The state is divided into districts for these nurses to work in and each is assigned to one district. Our work has been notably increased and its cost reduced since we have been carrying on this plan, some four years now. We have also been associated with the Tuberculosis Association in the promotion of county nursing services and many other health education projects.

2. We have cooperated with the Red Cross and with county health units and county commissioners also in the promotion of county nursing services. Since 1923, through the use of federal funds made available by Montana's acceptance of the Sheppard-Towner Act, we have assisted the following counties in the maintenance of county nursing services:

Beaverhead, Cascade, Dawson, Daniels, Pondera, Fergus, Fallon, Wibaux, Prairie, Lewis and Clark, Missoula, Gallatin, Powell, Flathead, McCone, Wheatland, Meagher, Hill, and Broadwater. The division stands ready, so long as funds permit, to aid in such services to any county undertaking to put on a nursing service for at least one year provided that such county has not already received this help.

3. A very helpful cooperation has been maintained with the Extension Division of the State College. This has included not only office cooperation but also close alliance of field activities. During the last two years this division has been able to assist at some of the Mothers' Camps through our field staff.

4. No discussion of cooperation would be adequate without special mention of the women's organizations of the state, notably the federated clubs, which have been of great assistance to the division in all of its activities. The State Parent-Teachers' Association, the Montana League of Women Voters and the State Business and Professional Women's Clubs should also be mentioned for their hearty cooperation in our undertakings.

Maternity and Infancy Work

Our maternity and infancy program has consisted of a general educational program carried out through our office by means of correspondence, distribution of pamphlets, posters and other literature pertaining to the subject; and by field work which has consisted of pre-natal, infant and pre-school health conferences conducted by the nurses of our field staff assisting local health officers and physicians.

During the past biennial period our field nurses have thoroughly covered every county in the state with maternity and infancy work, with the exception of those counties that have their own nursing services. A few figures are given below to indicate something of the scope of our work as it is impossible to describe it in greater detail due to limited space.

1925-1926	
Pamphlets, cards and other educational material distributed	136,135
Silver nitrate ampules (For prevention of ophthalmia neonatorum)	8,164
Public lectures and talks given	1,664
Health conferences held (Pre-natal, infant and pre-school)	1,500
Number of baby and pre-school children at conferences	18,519

School Work

Our school health work has been necessarily limited as our fund for this work was very small. Previous to 1925, funds were available only for maternity and infancy work. As a consequence, a considerable part of our two thousand dollar appropriation has been spent in printing school cards and bulletins and in the purchase of other material for carrying on school health work. A definite part of this fund has also been applied to salaries and traveling expenses of the director, one nurse and one clerk. This was in line with our policy of devoting part-time work to the school health field. Our field staff nurses, in cooperation with the Montana Tuberculosis Association, gave one-fourth of their time to school work as outlined above. It is difficult to estimate the exact amount of school work that can be credited to this division as it is bound up with the work of that association. A considerable piece of work has been done, and it should be stated here that because of our limited finances we have been forced to refuse a number of requests for further school work and for supplies.

Public Health Nursing

During the past two years we have continued to maintain a placement bureau for public health nurses in this office which has been of some service to employers of public health nurses. The standard of public health nursing in this state has been slowly raised and we have a group of well trained and highly efficient public health nurses in this state at the present time. The number of such nurses is increasing steadily, and with the addition of more county services each year, the outlook for public health education through nursing services is very bright. There is no question but that a well trained, efficient, public health nurse will save a community many times her salary in actual cash and the general value of such a person in the community is incalculable.

At the present time there are three field nurses, one full-time nurse employed by the Montana Tuberculosis Association and two full-time nurses employed by this division. There are fourteen county nurses covering sixteen counties (some nurses carry more than one county to a service while one county has two nurses.) There are eight school nurses, one nurse employed by the Butte Tuberculosis Society; two Indian welfare nurses, one employed by the American National Red Cross, and one by the Montana Tuberculosis Association; three industrial nurses; and six part-time nurses employed by the Metropolitan Life Insurance Company. This list represents a considerable increase during the past two years, and these nurses have in every case justified their employment.

In addition to the placement bureau for public health nurses, this division also maintains a small library for the use of the nurses of the state. A public health nurses' bulletin is issued every two months by the Child Welfare Division as a means of exchange of information for the nurses.

General Health Education

The Child Welfare Division has been very active the past two years in its general health education program; it has assisted the President of the Board of Health in a cancer week campaign; assisted the Secretary of the Board of Health in furthering the Seymour plan for the eradication of diphtheria; and assisted the Director of the Bureau of Vital Statistics in a steady campaign of publicity to increase the efficiency of birth registration in Montana.

In addition, the Director of the division has served as May Day Chairman 1926, and through the cooperation of the women's organizations of the state carried the work to a successful conclusion; and has also served as State Chairman of the Summer Round-Up Committee of the Parent-Teachers' Association.

The division maintains a series of traveling health libraries which are constantly in the field; and a good sized film library which is in much demand. The Child Welfare Division has also conducted a health column in the "Montana Woman," official organ of the women's clubs of the state; and a column on the health of children in the "Montana Farmer." From the letters of inquiry received from readers of these columns, it would seem that they are of some service to the people of the state.

Summary

There has been a steady growth of this division ever since its creation in 1917, but a more rapid increase has taken place since the acceptance of the Federal Maternity and Infancy Act. Yet our growth has never been able to keep up with the demand. Our greatest need now is for further funds to carry on our school health work. We feel very much the need of a full-time school staff nurse and for an increase in our allowance for printing and general school health supplies.

Our maternity and infancy program is going very well and we have probably reached the maximum appropriation (if we count the federal money as part of the appropriation) justified by the present population of the state.

APPENDIX

Regulations which were duly adopted by the State Board of Health during the Biennium ending November 30, 1926.

Part 11. Rule 1. Regulations for Vaccination at State Institutions.—All children on admission to State Vocational School at Helena, State Industrial School at Miles City, State School for Feeble-Minded and School for Deaf and Blind at Boulder, and the State Orphans' Home at Twin Bridges, must show evidence of successful vaccination against smallpox or be immediately vaccinated on entrance, and it is recommended that all children in these institutions be given toxin-antitoxin for the prevention of diphtheria.

Part 7. Rule 25, was amended to read as follows: Responsibility of Operatives.—Municipal authorities, water company officials, or employees in charge of pumping stations or water plants furnishing water for domestic use where water is subjected to sedimentation, filtration or disinfection, in order to secure a safe supply, shall not discontinue the use of sedimentation basin, nor of the filter bed, nor of the disinfection, and permit raw, untreated water to enter the supply mains, without first giving due notice to the local health officer and to the Secretary of the State Board of Health, Helena, by telephone, giving details of such changes as are made, and the approximate time of such changes, so that proper steps may be taken to safeguard the patrons. A copy of this rule shall be posted conspicuously in every pump house, filtration plant or other structure used to house purification works.

Rule 2 was amended to read as follows: Additional samples shall be collected at intervals as seem required in each case. These samples shall be collected by local health officers, water works officials, and other persons authorized by the Secretary of the State Board of Health. It shall be the duty of the officials so appointed to take the samples on the day designated. In case there is an undue delay in collecting these samples, the collector shall notify the State Board of Health, giving the causes. The water laboratory will furnish the containers for water samples and also full directions for sampling.

Rule 8 was amended to read as follows: Additional samples shall be collected at intervals as seem required in each case. These samples shall be collected by local health officers, water works officials and other persons authorized by the Secretary of the State Board of Health. It shall be the duty of the official so appointed to take the samples on the day designated by the water laboratory. If it is not possible to secure the samples on the day designated, the official must notify the laboratory the date that the samples will be forwarded. The water laboratory will furnish the containers for water samples and also full directions for sampling.

The following regulation was passed:

Regulation 62, Section (i).—All bottles used for bottling carbonated beverages or still drinks, before being filled, shall be cleansed by soaking in a hot caustic solution of not less than one hundred twenty-five degrees Fahrenheit, and shall contain not less than three per centum caustic or alkali expressed in terms of sodium hydrate, for a period of not less than five minutes, then thoroughly rinsed in pure water. The cleansing solution shall be changed frequently so as to prevent its becoming foul and unsanitary.

The following resolutions were adopted:

Regulations for Canneries.

Regulation 112.—The term "Cannery" as used in the regulations of the State Board of Health is held to mean a factory including all buildings, premises and stations where food for human consumption, except milk and milk products, is prepared commercially, sterilized by heat and preserved in hermetically sealed containers.

Premises

Regulation 113.—All grounds on which canning factories, warehouses, viners and other buildings used are located, must be properly graded to provide a natural drainage, to prevent accumulation of stagnant water and other material.

Regulation 114.—No litter, waste or refuse shall be allowed to accumulate in or around the buildings or yards.

Regulation 115.—Weeds shall be removed, grasses kept cut and roadbeds properly built and maintained. An application of road oil is recommended where such road is in close proximity to the room in which picking tables are located or the rooms in which blanchers and fillers are located, in order to prevent dust.

Water Supply

Regulation 116.—All Water used on the premises for drinking, cleaning, washing or other purposes must be safe and wholesome for the purposes for which it is to be used.

Buildings

Regulation 117.—All canneries shall be well lighted and ventilated. When natural light and ventilation are insufficient, provision shall be made to supply sufficient light and ventilation artificially. All floors, walls, ceilings, tables and other fixtures shall be maintained in such condition that they may readily be made clean and sanitary. The floors of all rooms used for manufacturing shall be water tight, and where it is necessary shall have sufficient pitch to insure proper drainage. Floors must be constructed of cement, tile, oiled wood or other impervious material. When and where necessary for the protection of employees portable or loose floor gratings shall be provided around blanchers, washers and other places where overflow is unavoidable. Ceilings or other overhead covering shall be dust proof. Walls and ceilings shall be smooth and kept in good condition. Where not constructed with glazed tile, walls and ceilings shall be kept well painted with light colored paint.

Regulation 118.—Window and window ledges, beams and all other places where dust and dirt may accumulate shall be kept clean.

Regulation 119.—Fixtures, utensils and other apparatus used in the manufacture, handling or storing of canned food shall be kept clean. Every factory using brine or syrup shall be equipped with a separate room in which all syrups or brines shall be mixed or compounded. Such syrup or brine room shall be separated from the rest of the factory by a tight partition and shall be well lighted, ventilated and screened.

Machinery and Equipment

Regulation 120.—All machinery, conveyors, picking tables, hoppers and other equipment with which the uncanned product comes in contact must be so arranged as to be easily accessible for cleaning.

Regulation 121.—All machinery, conveyors, picking tables, pea boxes, buckets or baskets, hoppers and all equipment with which the uncanned product comes in contact must be kept clean. Where necessary to prevent insanitary conditions, steam must be used in cleaning in connection with water.

Regulation 122.—All equipment shall be cleaned as soon as practical at the close of each day's operation and oftener if necessary to prevent insanitary conditions.

Regulation 123.—An ample supply of water and steam, with hose and other equipment necessary for proper cleaning of equipment, must be available. All equipment must be placed in good repair before the beginning of the season's operation, and maintained in such repair throughout the season.

Requirements Affecting Employees

Regulation 124.—No person afflicted with infectious or contagious disease or with infected wounds shall be employed.

Regulation 125.—Spitting on the floors or walls of factories is prohibited. No person shall, nor shall be permitted to, smoke, chew, or snuff tobacco while at work in the handling or preparing of food or containers, nor in any room used in the preparation of food during working hours.

Regulation 126.—Employees handling food products shall wear clean washable clothing or aprons. Employees handling food products shall wear clean caps over their hair, either of paper or washable material. Caps of open material, or hair nets, will not meet the above requirements.

Regulation 127.—Employees handling food shall keep their hands and finger nails as clean as the nature of their work will permit. Such employees shall wash their hands before beginning work and after leaving the toilet. Suitable notice to this effect shall be posted in a conspicuous place.

Regulation 128.—Separate dressing rooms shall be provided for each sex where a change of clothing for work is necessary or usual. A suitable place with hangers or well ventilated lockers shall be provided for clothing not in use. Every dressing room shall be properly lighted, ventilated and heated.

Regulation 129.—Common drinking cups shall not be used. Individual drinking cups or sanitary drinking fountains shall be provided in convenient locations.

Regulation 130.—Where sewage disposal facilities are available sanitary water-flushed toilets shall be provided. Separate toilets shall be provided for each sex. At least one toilet seat should be provided for every twenty factory employees. The floors shall be tight and of such material that they can be washed and kept clean. The doors shall be made self-closing and shall be so arranged that the seats cannot be seen from the outside. The toilets shall be well lighted and ventilated to the outside air, the windows and ventilators shall be screened against flies. Each toilet seat shall be preferably in a separate compartment, the partitions of which shall be not less than 5½ feet high and shall be at least one foot above the floor. Walls partitions and toilet seats, if constructed of wood, shall be covered with non-absorbent, light colored paint or varnish. Sanitary toilet paper shall be provided. Urinals shall not be constructed except within toilets or in a separate room or building, screened as provided for in the case of toilets proper.

Regulation 131.—Outside closets shall be sufficiently removed from the factory to avoid being a nuisance, and built tight above the ground. They shall be properly ventilated and screened so as to be fly proof and shall be kept clean. The doors shall be self-closing. The vault or receptacle shall be located and constructed so that there will be no danger of polluting wells or other water supplies used for human consumption. Outside closets shall be kept thoroughly disinfected and shall be cleaned out or discontinued before the contents reach the ground level.

Regulation 132.—Adequate lavatories shall be provided for each sex. They shall be convenient to the toilets. They shall be provided with running water, soap, and sanitary individual towels. Lavatory facilities shall not be less than one bowl with faucet for every twenty employees.

Regulation 133.—One employee shall be charged with the duty of keeping the cannery in proper sanitary condition at all times.

Regulation 134.—All canneries shall be inspected by the local or county health officer or his deputy and when inspected must be scored according to the score card which is a part of these regulations.

Regulation 135.—These regulations must be posted in a conspicuous place in every cannery.

The following regulation was adopted:

Part 7. Rule 26. Cross connections:

(a) A cross connection is herewith defined as a physical arrangement whereby a public water supply system is connected with another water supply system, either public or private, in such a manner that a flow of water into the public water supply system from such other water supply system is possible.

(b) Hereafter no plans for the construction of a public water supply system containing provisions for cross connections as defined above, shall be approved by the State Board of Health, providing that the secondary supply is of unsatisfactory quality and will endanger the purity of the public supply.

(c) Beginning from the date of the adoption of this rule, cities and towns in which there exist cross connections as above defined, shall take such steps as are necessary to eliminate cross connections by July 1, 1927.